

# **A SYSTEM AND METHOD FOR A MEDIA CODEC EMPLOYING A REVERSIBLE TRANSFORM OBTAINED VIA MATRIX LIFTING**

## **ABSTRACT OF THE DISCLOSURE**

A system and method for encoding and/or decoding a signal, such as an audio signal, employing a reversible transform obtained via matrix lifting. This reversible transform not only converts integer input to integer output, but also reconstructs the exact input from the output. It is one of the key modules for lossless and progressive to lossless audio codecs. The system and method of the invention produces smaller quantization noise and better compression performance of lossless and progressive to lossless codecs previously known. A number of embodiments employing RMDCT solutions are described. Matrix lifting is used to implement a reversible fast Fourier transform (FFT) and a reversible fractional-shifted FFT, respectively, which are further combined with reversible rotations to form a RMDCT. A progressive-to-lossless embedded audio codec (PLEAC) employing RMDCT is implemented with superior results for both lossless and lossy audio compression.